

## CUBAN AMPHIBIANS AND REPTILES COLLECTED FOR THE UNITED STATES NATIONAL MUSEUM FROM 1899 TO 1902.

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Shortly after the war with Spain for the liberation of Cuba several members of the staff of the United States National Museum visited the island for the purpose of making collections of natural history specimens.

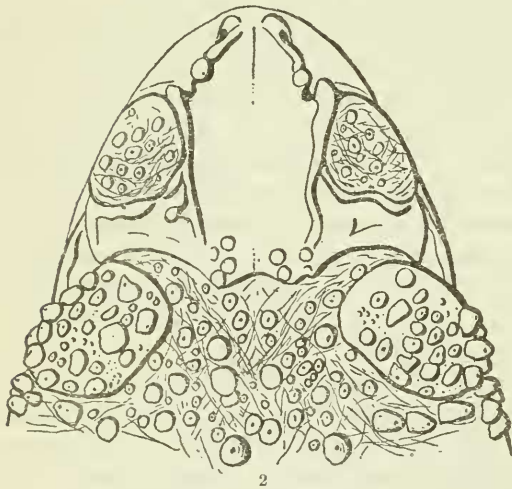
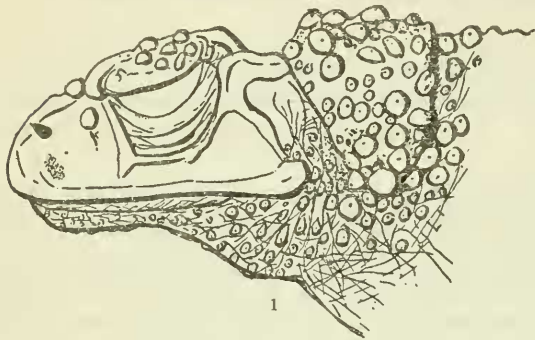
The principal expedition was that of Messrs. William Palmer and J. H. Riley, who collected in western Cuba, between Matanzas and Pinar del Rio, from February 14 to August 7, 1900, including a stay at Nueva Gerona, Isle of Pines, from June 27 to July 11. The most important reptile collections were made at Pinar del Rio and in a locality called El Guamá, about 6 miles northwest of the city of Pinar del Rio from February 18 to March 29; at San Diego de los Baños, from April 4 to 24; at Guanajay and Mariel, April 27 to May 15, and at Cabañas May 15 to June 4. The locality El Guamá has become very important as the type-locality of the as yet unique *Bufo longinasus*. Mr. Palmer describes it as a small store situated in a pleasant valley in the coffee and tobacco belt, surrounded by precipitous hills, those to the north being covered with pines. Between these hills the stony beds of mountain streams, nearly dry except for scattered pools of water at the time of his visit, made their way toward the south. In one of these rocky beds near the pine woods the precious type of that minute toad was captured.

About the same time Dr. C. W. Richmond and myself who had spent several months collecting in Porto Rico, stopped on our return a few days (Apr. 22 to 24, 1900), at Santiago de Cuba. The visit was unexpected and all our collecting paraphernalia were packed away. Dr. H. B. Parker, the resident port surgeon, very kindly supplied us with some formalin, so that we were able to preserve a number of specimens which we collected in one of the valleys close to town. I made very careful color notes on the fresh specimens, which are incorporated verbatim in the present report.

Mr. B. S. Bowdish, of Demarest, New Jersey, was employed by the United States National Museum for a short time in the latter part of 1901 and the beginning of 1902. He collected in the eastern part of the island, principally at Guamá and in the immediate vicinity of

Santiago de Cuba. Guamá is a mining camp near the coast, about 40 miles due west from Santiago de Cuba. He describes the region as a very wild one, with no habitations in the immediate vicinity save those connected with the camp. The mines are some 5 miles back from the coast on precipitous hills and the camp was situated just below them.

Mr. William Palmer in the latter half of January and the first half of February, 1902, again visited Cuba, this time the eastern end.



FIGS. 1-2.—*BUFO PELTOCEPHALUS*. NAT. SIZE. NO. 28024, U.S.N.M  
NUEVA GERONA, ISLE OF PINES.

and *Eleutherodactylus*, of which he has made a special study, as well as for data relating to the specimens of *Arrhyton* in the Museum of Comparative Zoölogy. His various writings on West Indian batrachians and reptiles, particularly his Contribution to the Zoogeography of the West Indies, with especial reference to Amphibians and Reptiles<sup>1</sup> and The Reptiles and Amphibians of the Isle of Pines<sup>2</sup> have been of the utmost assistance.

The reptiles collected were obtained mostly at Baracoa and at San Luis and El Cobre, not far from Santiago de Cuba.

While stationed at Matanzas in 1899 Mr. J. W. Daniel, jr., made a small collection of reptiles, which he afterwards presented to the United States National Museum. While not extensive, it was nevertheless a very interesting lot, since it contained species not obtained by any of the other parties and heretofore represented in the Museum by unsatisfactory material only or not at all.

I have to thank Dr. Thomas Barbour for examining and verifying the identification of the various species of *Anolis*

<sup>1</sup> Mem. Mus. Comp. Zoöl., vol. 44, No. 2, 1914.

<sup>2</sup> Ann. Carnegie Mus., vol. 10, pp. 297-308.

# AMPHIBIA.

## SALIENTIA.

*BUFO LONGINASUS* Stejneger.

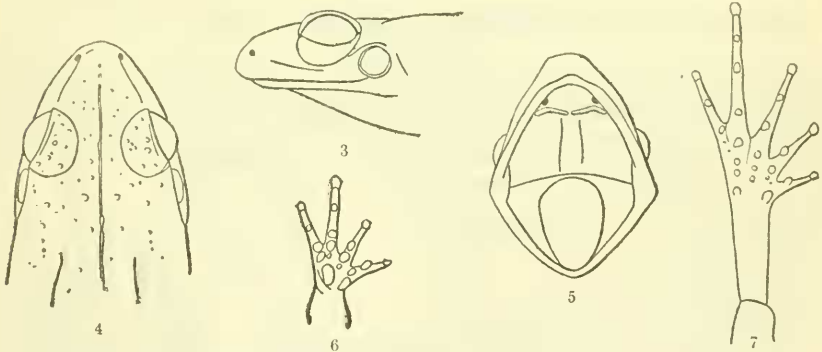
This diminutive and beautiful toad was the most important discovery of the Palmer and Riley expedition. A single specimen was captured by Mr. Palmer at dusk on March 9, 1900. It was sitting on a rock in a mountain stream near El Guamá, Pinar del Rio, and no other specimen was seen. Doctor Barbour, who searched for it at the same place some years later without rediscovering it, has suggested that its habits, as indicated by the extensively webbed hind feet, may be quite aquatic, which may account for it being so difficult to find. It was described in the Proceedings of the United States National Museum.<sup>1</sup>

*BUFO PELTOCEPHALUS* Tschudi.

Figs. 1 to 2.

Judging from the number brought home by Palmer and Riley, this large toad must be quite common. Numerous specimens were collected in July at Nueva Gerona, Isle of Pines, and others at El Guamá, Pinar del Rio, in March, and at Guanajay in May. Palmer, in 1902, sent in additional specimens from El Cobre, captured in February.

Two views are given of the head of a specimen from the Isle of Pines. I can discover no difference between the toads from this island and the main island of Cuba.



FIGS. 3-7.—*ELEUTHERODACTYLUS RICORDII*. 3 X NAT. SIZE. No. 27415, U.S.N.M. PINAR DEL RIO.

*ELEUTHERODACTYLUS RICORDII* Duméril and Bibron.

Figs. 3 to 7.

Only two specimens were secured—one adult, No. 27414, from El Guamá, and a younger one, No. 27415, from Pinar del Rio, both in March, 1900.

Although differing somewhat, the two specimens apparently belong to the same species.

<sup>1</sup> Vol. 28, June 24, 1915, p. 765, figs. 1-6.

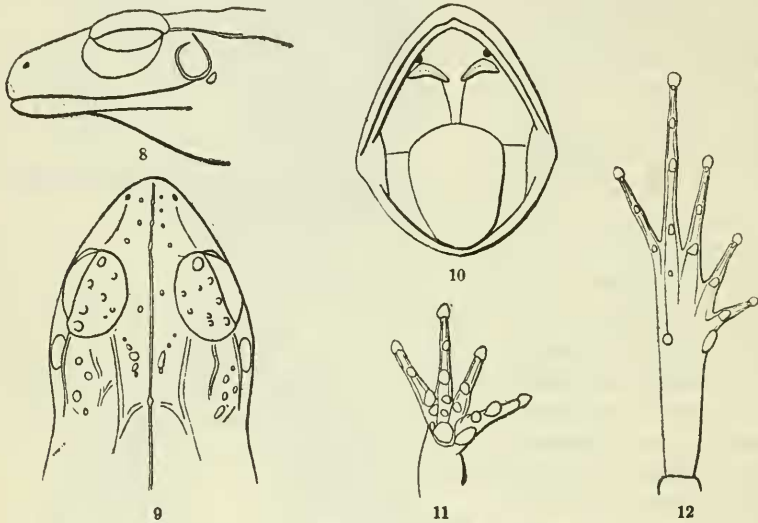
**ELEUTHERODACTYLUS AURICULATUS (Cope).**

Three specimens from San Diego de los Baños, by Palmer and Riley, and one from Baracoa. The former thus confirm the occurrence of this species in western Cuba. The type came from eastern Cuba.

**ELEUTHERODACTYLUS CUNEATUS (Cope).**

Figs. 8 to 12.

A large number of specimens were collected in 1900 at El Guamá and at San Diego de los Baños in March and April. Adult and young



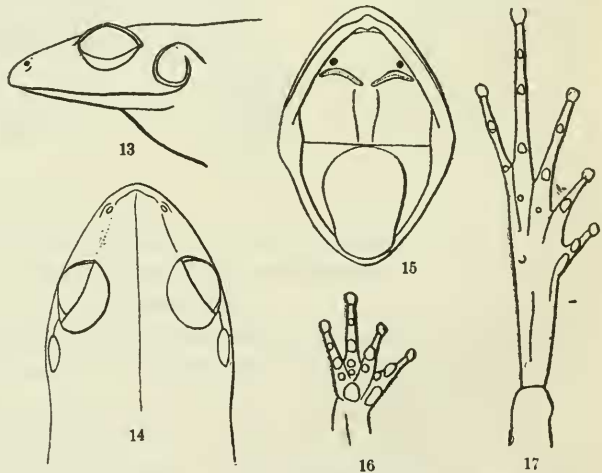
FIGS. 8-12.—*ELEUTHERODACTYLUS CUNEATUS*. 2 × NAT. SIZE. No. 26654, U.S.N.M. SAN DIEGO DE LOS BAÑOS.

were also taken by Palmer at Baracoa in January, 1902. They have been compared with the cotypes in the Museum (U.S.N.M. No. 5202) which were collected in eastern Cuba by Dr. C. Wright.

**ELEUTHERODACTYLUS DIMIDIATUS (Cope).**

Figs. 13 to 17.

The species is recorded here, as Mr. Bowdish, in December, 1901, obtained a specimen at Guamá, No. 29767.

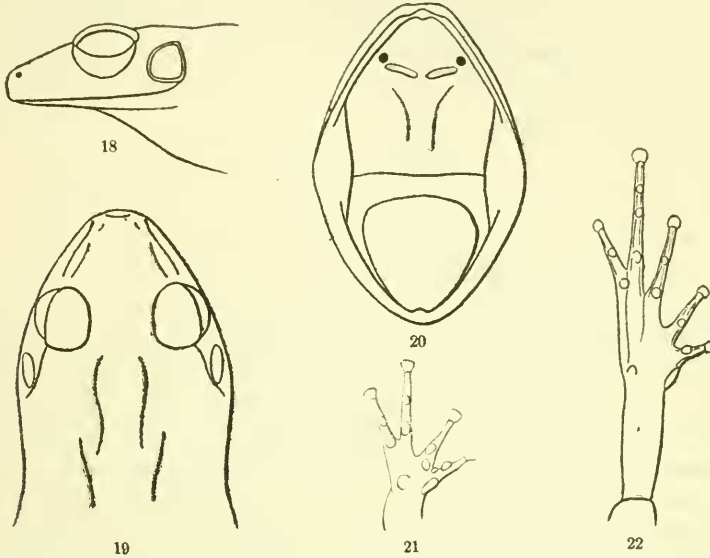


FIGS. 13-17.—*ELEUTHERODACTYLUS DIMIDIATUS*. 2 × NAT. SIZE. No. 29767, U.S.N.M. GUAMÁ, EASTERN CUBA.

## ELEUTHERODACTYLUS VARIANS (Gundlach and Peters).

Figs. 18 to 22.

Five specimens from El Guamá, San Diego de los Baños, and Mariel, were collected by Palmer and Riley.

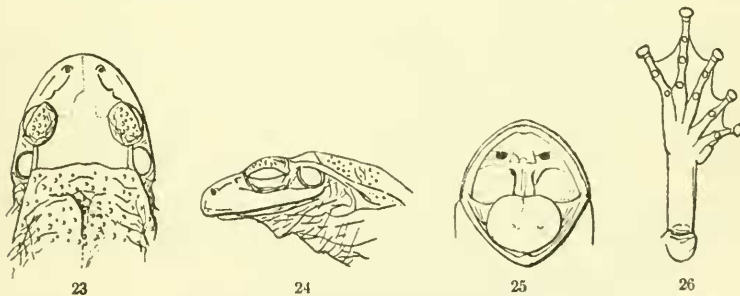


FIGS. 18-22.—ELEUTHERODACTYLUS VARIANS.  $3\times$  NAT. SIZE. NO. 27417, U.S.N.M. EL GUAMÁ, PINAR DEL RIO.

## HYLA SEPTENTRIONALIS Boulenger.

Figs. 23 to 26.

Of this common species Palmer and Riley brought home a large number of specimens from most of the localities visited, Habana,



FIGS. 23-26.—HYLA SEPTENTRIONALIS.  $\frac{3}{8}\times$  NAT. SIZE. NO. 27425, U.S.N.M. PINAR DEL RIO.

Pinar del Rio, San Diego de los Baños, Guanajay, Cabañas, Marianao, as well as from the Isle of Pines.

Doctor Richmond and myself found it at Santiago de Cuba on April 22, 1900. A specimen (No. 26794 U.S.N.M., collector's No. 9073) was caught, regarding which I made the following notes at the time: Iris brassy; a dark grayish line from nostrils through eye (pupil) to over and behind tympanum. When caught, the whole animal was nearly uniform whitish, although sitting on a green leaf; when taken out of the bag in which it was brought to the laboratory it was very pale drab above with faint indications of dusky markings on the back and limbs.

## REPTILIA.

### SAURIA.

#### GONATODES FUSCUS (Hallowell).

It is with but slight hesitation that I record the Cuban gecko of this genus under the above name,<sup>1</sup> and I can not accept *Gonatodes albogularis* at the present time as the correct name. *Gonatodes albogularis* was based upon specimens from Martinique,<sup>2</sup> and although they were said to have been collected by Plée, there appears to be no reason to doubt the authenticity of the locality, since no such gecko occurs in Porto Rico. But if the types came from Martinique, the chances are that they agree more nearly with one of the South American forms, especially as Boulenger has recorded *Gonatodes vittatus* from the Island of Dominica. If this surmise is correct, the Cuban gecko must take the name of the Central American form. It is true that the name *Gymnodactylus maculatus*<sup>3</sup> has been applied to specimens doubtfully alleged to have come from Cuba, but I have had the good fortune to examine the type-specimen in the Museum in Vienna and found it to agree exactly with specimens from Carácas, and I have no hesitation in asserting that the Cuban locality is erroneous; it is probably a female *G. vittatus*.

I have also been able to examine the type of *Gonatodes notatus*<sup>4</sup> in the Museum at Copenhagen. It is registered as No. 18, and was collected by Lieut. H. Koch at Acquin, Haiti. For comparison I had specimen No. 14, collected in Cuba by Captain Andrea and recorded by Reinhardt as *Gonatodes albogularis*. The difference

<sup>1</sup> *Stenodactylus fuscus* Hallowell, Journ. Acad. Nat. Sci. Philadelphia (n. s.), vol. 3, 1855, p. 33 (type-locality, Nicaragua).

<sup>2</sup> *Gymnodactylus albogularis* Duméril and Bibron, Erp. Gén., vol. 3, 1835, p. 415 (type-locality, Martinique); Duméril, Cat. Méth. Rept. Mus. Paris, vol. 1, 1851, p. 43.

<sup>3</sup> Steindachner, *Novara Exp.*, Zool., vol. 1, Rept., 1867, p. 18, pl. 1, fig. 4 (type-locality unknown).

<sup>4</sup> *Gonatodes notatus* Reinhardt and Lütken, Vid. Medd. Naturh. For. (Copenhagen) 1863 (n. 280); separate, p. 128 (type-locality, Acquin, Haiti).

between the two is not one of coloration only, but the Haitian specimen has decidedly larger scales than the Cuban. This observation I also had occasion to verify in the Museum at Vienna on two specimens from Gonaïves, Haiti, so that I have no doubt that the name *Gonatodes notatus* can not be applied to the Cuban form. These Haitian specimens, moreover, had the lateral black band of *G. albogularis*. The Cuban form consequently differs both from *notatus* and from true *albogularis* and *vittatus* in the smaller abdominal and sub-femoral scales. The coloration appears also quite characteristic, especially that of the old males. I have before me a color sketch by Mr. J. H. Riley, made in 1900 from a living specimen taken in Habana. The male is of a bluish black with head and neck of bright ochraceous yellow. There is a distinct sky-blue narrow line on the labials under the eye, a small spot of the same color above the ear, and a crimson spot on the side of the neck on the yellow where it joins the black body-color. Unfortunately the bright colors of the living animal fade in alcohol, and I know of no good color description of typical *Gonatodes fuscus* taken from living specimens, but we have specimens from Nicaragua in alcohol, for instance, No. 19646, a male collected by Dr. C. W. Richmond at Greytown, Nicaragua, on February 12, 1892, which both in color and scutellation exactly match Mr. Riley's Habana specimens as they now appear in alcohol.

I can not throw much light on the question of the identity of *G. albogularis* and *G. vittatus*. The United States National Museum has numerous specimens from Curaçao which, from the large sub-femoral scales and the characteristic coloration, I have no hesitation in identifying as *G. albogularis*; that is, the males have the broad dark blue band on the side of the neck, uniform grayish back and white throat. There are also two typical *G. vittatus* from Venezuela.<sup>1</sup> I am unable to appreciate any marked difference in scutellation or proportions, but the coloration is certainly very different in both sexes. What puzzles me is that Boulenger refers a male from Curaçao to *G. vittatus*.<sup>2</sup> He afterwards expressed the opinion that *G. vittatus* is only a "variety" of *G. albogularis*.

Barbour, in his Contribution to the Zoogeography of the West Indies (p. 256), hints at the possibility of this species having been introduced fortuitously into Cuba. It is true that most specimens recorded have been from Habana and Santiago, but Barbour mentions a couple of occurrences from other localities, and Palmer and Riley collected four specimens at Mariel.

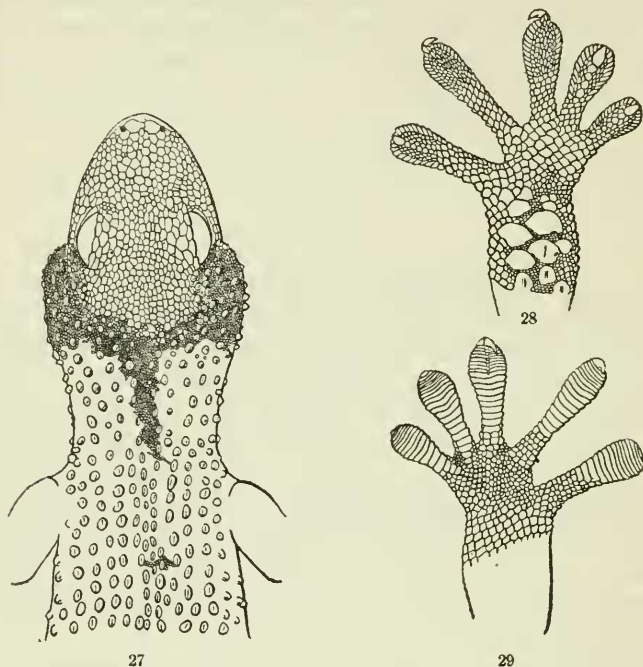
<sup>1</sup> Stejneger, Proc. U. S. Nat. Mus., vol. 24, 1901, p. 181.

<sup>2</sup> Cat. I.iz. Brit. Mus., vol. 1, 1885, p. 60.

## TARENTOLA CUBANA Gundlach and Peters.

Figs. 27 to 29.

A single specimen of this rare species was taken by Bowdish at Guamá, on January 6, 1902. Unfortunately it was very much damaged (No. 29777 U.S.N.M.).



FIGS. 27-29.—TARENTOLA CUBANA. 2 X NAT. SIZE. No. 29777, U.S.N.M., GUAMÁ, EASTERN CUBA.

## SPHAERODACTYLUS ELEGANS MacLeay.

In 1834 MacLeay named a Cuban gecko *Sphaeriodactylus elegans*.<sup>1</sup> It was revived for the present species by Reinhardt and Lütken in 1863.

Palmer and Riley collected this species at Pinar del Rio, February 23, at Mariel, June 10, and in Habana July 28, 1900. They also obtained a specimen at Nueva Gerona, on the Isle of Pines, on July 11.

## SPHAERODACTYLUS CINEREUS MacLeay.

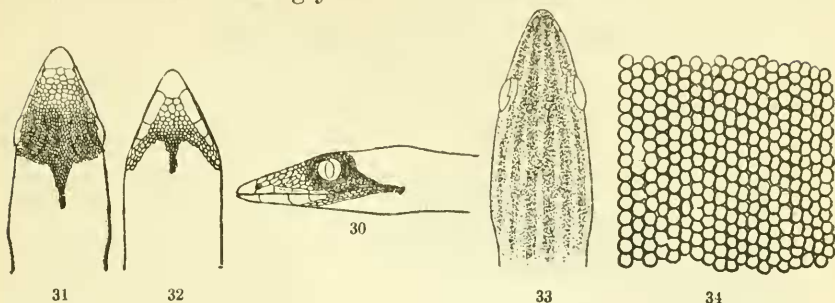
Figs. 30 to 34.

This species was also first briefly characterized by Mr. MacLeay<sup>1</sup> as *Sphaeriodactylus cinereus* from Cuban specimens without more definite locality. Cocteau's employment of the name did not take place until late in 1837, probably in December, when it appeared in the second "livraison" of de la Sagra's *Histoire Physique, Politique*

<sup>1</sup> Proc. Zool. Soc. London, 1834, p. 12; Trans. Zool. Soc. London, vol. 1, p. 193.



et Naturelle de l'Île de Cuba on plate 18. The text was not published until the following year.



FIGS. 30-33.—*SPHAERODACTYLUS CINEREUS*.  $2\frac{1}{2} \times$  NAT. SIZE. NO. 27390, U.S.N.M. PINAR DEL RIO.—34,  $8 \times$  NAT. SIZE. LEPIDOSIS OF MIDDLE OF BACK. SAME SPECIMEN.

Numerous specimens were collected by Palmer and Riley in various localities, namely, at Pinar del Rio, Mariel, and Habana.

*SPHAERODACTYLUS NOTATUS* Baird.

Palmer and Riley did not obtain this species, but Bowdish collected one at Guamá on January 2, 1902.

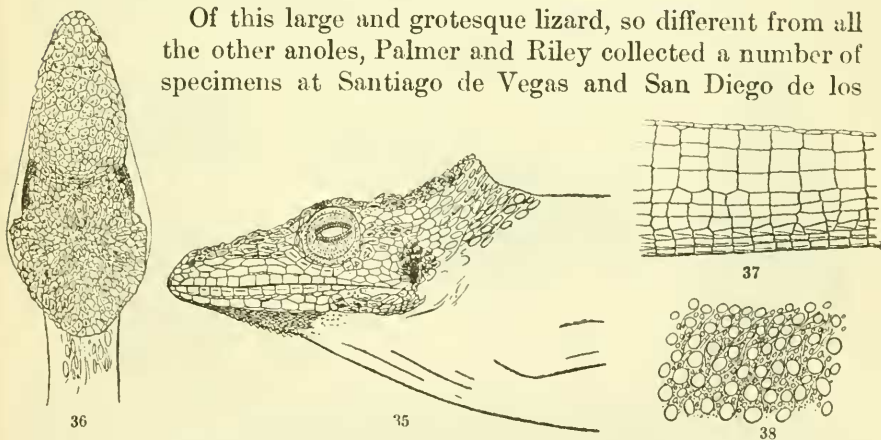
*HEMIDACTYLUS MABOUIA* (Moreau de Jonnés).

Two specimens were collected by Palmer and Riley on May 9, 1900, at Mariel. One of these specimens has been described in detail and figured in my Herpetology of Porto Rico.<sup>1</sup> According to Cocteau this species is widely distributed in Cuba.

*CHAMAELEOLIS CHAMAELEONIDES* (Duméril and Bibron).

Figs. 35 to 38.

Of this large and grotesque lizard, so different from all the other anoles, Palmer and Riley collected a number of specimens at Santiago de Vegas and San Diego de los



FIGS. 35-36.—*CHAMAELEOLIS CHAMAELEONIDES*.  $\frac{3}{4} \times$  NAT. SIZE. NO. 27502, U.S.N.M. SAN DIEGO DE LOS BAÑOS.—37 REPRESENTS THE SIDE OF THE TAIL AT ABOUT THE FIFTH VERTICIL,  $1\frac{1}{3} \times$  NAT. SIZE; 38, THE LEPIDOSIS OF THE SIDE OF BACK,  $\frac{3}{4} \times$  NAT. SIZE.

Baños. Palmer collected another specimen at Baracoa in 1902. Recently the United States National Museum has received specimens

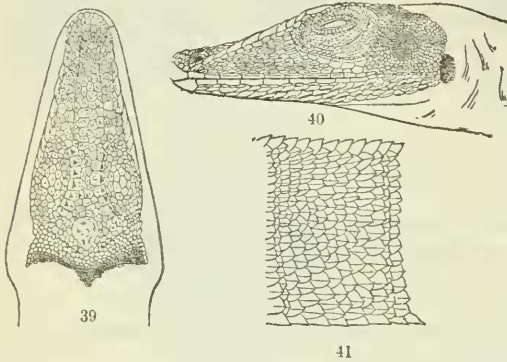
<sup>1</sup>Rep. U. S. Nat. Mus., 1902 (1904), p. 599, figs. 40-44.

collected by Dr. Paul Bartsch and Mr. J. B. Henderson at Cabañas, La Mulata, and Cape San Antonio.

*DEIROPTYX VERMICULATA* (Duméril and Bibron).

Figs. 39 to 41.

This large anolis is so isolated and unrelated not only to the other species in Cuba, but to all known species of the whole anoline subfamily, that its recognition as a separate generic type is justly called for. The most obvious structural character which is unique in the group is the absence of a dewlap and the presence of a transverse throat fold.



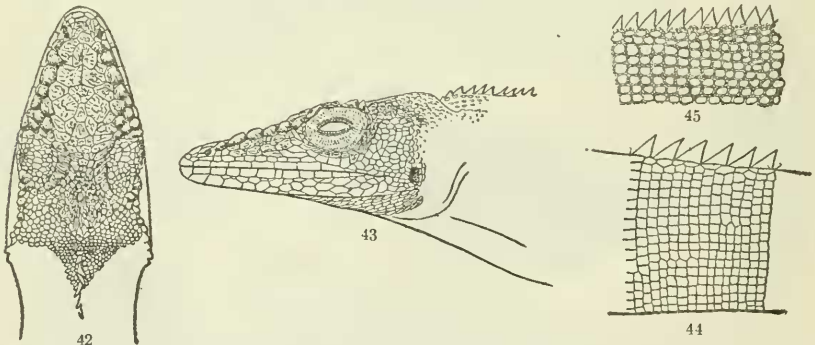
FIGS. 39-40.—*DEIROPTYX VERMICULATA*. NAT. SIZE. No. 27335, U.S.N.M. EL GUAMÁ, PINAR DEL RIO.—41. SIDE OF TAIL OF SAME AT ABOUT THE FIFTH VERTICIL.  $2\frac{1}{2} \times$  NAT. SIZE.

observation that this species takes to the water when pursued or wounded.

*ANOLIS EQUESTRIS* Merrem.

Figs. 42 to 45.

Four adult specimens were collected by Palmer and Riley at El Guamá, Pinar del Rio, at San Diego de los Baños, and at Guanajay. Bowdish obtained one at Guamá the following year.



FIGS. 42-43.—*ANOLIS EQUESTRIS*.  $\frac{3}{4} \times$  NAT. SIZE. No. 27504, U.S.N.M. SAN DIEGO DE LOS BAÑOS.—44 REPRESENTS SIDE OF TAIL AT ABOUT THE FIFTH VERTICIL.—45, PART OF DORSAL CREST AND LEPIDOSIS  $1\frac{1}{2} \times$  NAT. SIZE; SAME INDIVIDUAL.

*ANOLIS HOMOLECHIS* (Cope).

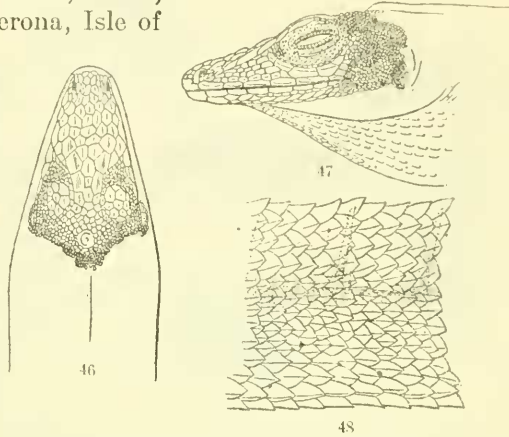
Figs. 46 to 48.

This species was originally described by Cope as *Xiphosurus homolechis*,<sup>1</sup> from a specimen in British Museum, the habitat of which was

unknown beyond the fact that it was from some island in the West Indies. When Boulenger, in 1885, published the second volume of his Catalogue of Lizards the specimen was still unique and the particular island to which it belongs unknown. However, in 1892 Müller, of Basel, recorded it from Cuba,<sup>1</sup> and since then it has been found there by nearly all collectors; thus, by Doctor Richmond and myself in 1900 at Santiago de Cuba, in eastern Cuba, and by Palmer and Riley in the western part. They brought home numerous specimens from San Diego de los Baños, where it must have been very common, and also from El Guamá, Caimito, Mariel, as well as from Nuevo Gerona, Isle of Pines. It is quite remarkable that this rather conspicuous species escaped the attention of Doctor Gundlach.

At Santiago de Cuba on April 23, 1900, I took the following color notes from a specimen collected by Doctor Richmond (No. 26770 U.S.N.M., collector's No. 9074): Iris blackish-brown; edge of eyelids bright yellow; general color above isabella colored with a wash of

cinnamon, especially on the flanks; a series of faintly indicated narrow dusky chevron marks with the points turned backward on the median line of the back; on sacrum a larger, irregular, dusky mark on each side; on the sides of back and flanks numerous vertical rows of small pale dots more or less margined with dusky; a faint narrow pale line from above shoulder to insertion of hind limb; suboculars whitish; tail with the merest indication of dusky crossbars; throat and foreneck white, the sides of throat with several series of darkish gray spots; rest of underside delicate straw-yellow, gradually merging into the white of the foreneck and the cinnamon of the flanks; underside of limbs with minute gray dots; a line composed of blackish dots along posterior edge of forelimb and outer edge of tibia; a series of yellow dusky-margined ocelli on posterior edge of femur; dewlap pale pearl-gray with distant white scales and slightly thickened anterior edge of white scales; tongue flesh colored; a low but long nuchal fold and a low dorsal fold; on the tail a pretty high crest of the *A. cristatellus* order, but the end of the tail seems to be prehensile to



FIGS. 46-47.—*ANOLIS HOMOLECHIS*. 2 X NAT. SIZE. NO. 26770. U.S.N.M. SANTIAGO DE CUBA.—48 REPRESENTS SIDE OF TAIL AT ABOUT THE FIFTH VERTICIL, 4 X NAT. SIZE, OF SAME INDIVIDUAL.

<sup>1</sup> Verh. Naturf. Ges. Basel, vol. 10, pt. 1, p. 211.

some extent, inasmuch as the specimen which was held captive for a little while occasionally rolled the tip of the tail up under him much after the fashion of a true chameleon. The specimen before it was caught was of a nearly uniform rich dark brown.

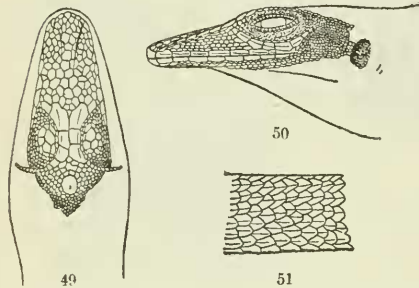
*ANOLIS LUCIUS* Duméril and Bibron.

Three specimens were collected by Palmer and Riley at Matanzas on February 14, 1900.

*ANOLIS ARGENTEOLUS* Cope.

Figs. 49 to 51.

Four specimens collected by myself on April 22, 1914, near Santiago in the eastern part of the island, shortly after Mr. Palmer obtained the Matanzas specimens of *A. lucius*, afforded a chance for direct comparison of these two species which Boulenger had united.<sup>1</sup> The differences are many and the separation fully justified, as already set forth by Doctor Barbour.<sup>2</sup>



FIGS. 49-50.—*ANOLIS ARGENTEOLUS*. 2 X NAT. SIZE. No. 26777, U.S.N.M. SANTIAGO DE CUBA.—51 REPRESENTS THE LEPIDOSIS OF THE SIDE OF TAIL AT ABOUT THE FIFTH VERTICIL, 4 X NAT. SIZE, FROM SAME INDIVIDUAL.

A specimen (No. 26777 U.S. N.M., collector's No. 9071) collected by myself was colored as follows: Ground color above pale ecru-drab with faint dusky markings and a series of white spots,

ill defined but more or less margined with dusky down the median line of the back; tail cross-banded with pale dusky; supralabials and subocular white; underside white, waxy, almost translucent, the throat with narrow gray divergent lines which disappear on the neck; dewlap whitish with series of rather close-set white scales; tongue white. Several smaller individuals, with scarcely a dewlap, resemble the specimen described, but the whole belly is decidedly primrose-yellow, not white as the rest of the under surface. Found principally on trunks of trees with pale-colored bark.

Additional specimens were collected by Palmer in 1902 at El Cobre and San Luis.

*ANOLIS SAGREI* Duméril and Bibron.

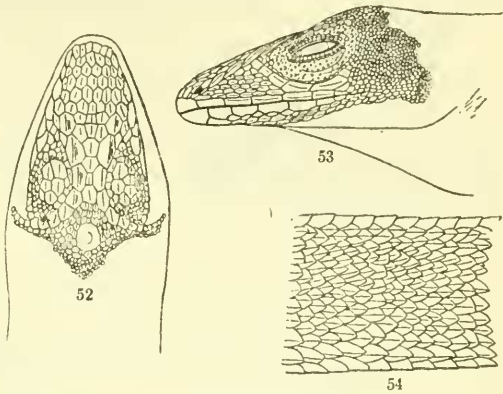
Figs. 52 to 54.

Large series of this common species were secured by all the parties. A mere enumeration of the localities will be sufficient: San Diego de los Baños; Santiago de Cuba; El Guamá, Pinar del Rio; Quemadas; Matanzas; Pinar del Rio; Guanajay; Caimito; Mariel; Cabañas; Habana; San Luis; El Cobre; and Nuevo Gerona on the Isle of Pines.

<sup>1</sup>Cat. Liz. Brit. Mus., vol. 2, 1885, p. 45.

<sup>2</sup>Mem. Mus. Comp. Zool., vol. 44, No. 2, March, 1914, p. 285.

The following color note on the living specimen was taken by me at Santiago de Cuba April 22, 1900 (No. 26771, U.S.N.M., collector's No. 9072): Ground color above drab more or less washed with rusty, with indication of cinnamon colored median dorsal band and dusky cross markings on either side; tail closely cross-barred with dusky; under-side whitish with pale indications of gray stripes on side of neck; dewlap intense scarlet vermillion, the anterior edge thickened with scales which, like the distant scales on the pouch, are straw-yellow; on back and neck erectile folds as in *Anolis cristatellus*. This species varies greatly in color, the ground being often either



FIGS. 52-53.—*ANOLIS SAGREI*.  $2\frac{3}{4} \times$  NAT. SIZE. No. 26771, U.S.N.M. SANTIAGO DE CUBA.—54 REPRESENTS SIDE OF TAIL AT ABOUT THE FIFTH VERTICIL, FROM SAME INDIVIDUAL.  $5\frac{1}{2} \times$  NAT. SIZE.

much grayer or browner than in the individual described, and the markings darker and more distinct. In many individuals the median dorsal cinnamon band is also brighter and more distinctly defined.

*Anolis sagrei* is found on the ground and on fence posts, and is much more wary and shy than the other two species, *porcatus* and *homolechis*. With its erectile crests and color, it reminds one of *A. cristatellus*, but it is much shyer.

**ANOLIS LOYSIANA (Cocteau).**

The original description of this species is usually quoted as occurring in *Compte Rendu des Séances de l'Academie des Sciences (Paris)*<sup>1</sup>, but as a matter of fact the name does not occur there. It is found, however, in *L'Institut*,<sup>2</sup> where the species is properly diagnosed and named *Acantholis loysiana*. Cocteau's paper, of which only an abstract is printed, was presented at the meeting of the Royal Academy two days before.

A number of specimens of this peculiar species were collected by Palmer and Riley at San Diego de los Baños April 16 and 17, 1900.

**ANOLIS ALUTACEUS Cope.**

On the main island only taken at San Diego de los Baños by Palmer and Riley in April. Two others were also collected by them at Nueva Gerona, Isle of Pines, as previously recorded by Barbour.

<sup>1</sup> Vol. 3, 1836, p. 226.

<sup>2</sup> Sec. 1, vol. 4, Aug. 31, 1836, p. 287.

<sup>3</sup> Ann. Carnegie Mus., vol. 10, 1916, p. 302.

## ANOLIS ANGUSTICEPS Hallowell.

Specimens of this interesting species, the proper name of which has only recently been available, thanks to Doctor Barbour's researches, were collected by Palmer and Riley at Nueva Gerona, Isle of Pines, on June 5, 1900.

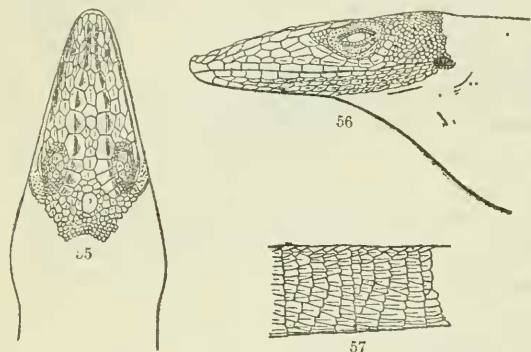
## ANOLIS MESTREI Barbour.

Of this recently described species<sup>1</sup> Palmer and Riley collected four specimens—three at San Diego de los Baños and one at El Guamá near Pinar del Rio, the latter according to Mr. Palmer's notes, near top of mountain.

## ANOLIS PORCATUS Gray.

Figs. 55 to 57.

A common species. The large series collected at San Diego de los Baños helped to confirm its specific distinctness from *A. carolinensis* of the southern



FIGS. 55-56.—ANOLIS PORCATUS.  $1\frac{1}{4} \times$  NAT. SIZE. No. 26776, U.S.N.M. SANTIAGO DE CUBA.—57 REPRESENTS SIDE OF TAIL AT ABOUT FIFTH VERTICIL OF SAME INDIVIDUAL,  $2\frac{3}{4} \times$  NAT. SIZE.

United States. Palmer and Riley collected it also at Pinar del Rio, Guanajay, Caimito, Cabañas, and Habana, as well as on the Isle of Pines. Dr. C. W. Richmond and I met with it at Santiago de Cuba, and Mr. Bowdish collected it there and at Guamá.

Among my notes taken at the time I find the following color description of the specimen collected (No. 26776, U.S.N.M., collector's No. 9069): Above brilliant emerald green changing almost to raw sienna when shot; underside white washed with "pale blue", underside of tail with greenish; dewlap light purple with distinct white scales (no black postocular or transauricular patch). A somewhat smaller individual at the same time had the dewlap of the same color and also the same general green body color, but down the middle of the back it had a well-marked, narrowly dusky-edged clay-colored band.

<sup>1</sup> Proc. Biol. Soc. Washington, vol. 29, Jan. 25, 1916, p. 19.

NOROPS OPHIOLEPIS (Cope).

Figs. 58 to 60.

A good series was obtained by Palmer and Riley at San Diego de los Baños and Pinar del Río.

CYCLURA CYCLURA (Cuvier).

Palmer and Riley were very fortunate in obtaining several fine adults of this species on the Isle of Pines.

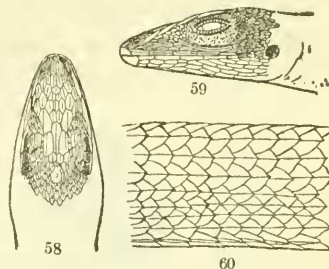
LEIOCEPHALUS CARINATUS Gray.

Figs. 61 to 62.

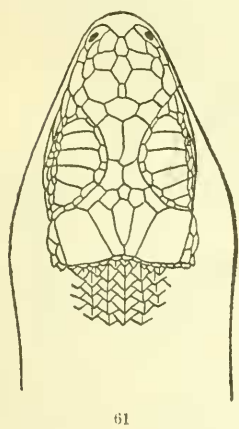
This species was collected by Bowdish and by myself at Santiago de Cuba and by Palmer and Riley at Mariel, Cabañas, and Marianao as well as on the Isle of Pines at Nueva Gerona.

The colors of a freshly killed specimen at Santiago de Cuba (No. 26767 U.S.N.M., collector's No. 9077) are as follows: Above dark brownish gray with narrow irregular bands of isabella color; head uniform dark; tail cross-barred; underside whitish with oblique gray bands on throat and indistinct gray cross bands on belly to groin; a black blotch behind eye and two oblique blackish bands on side of neck.

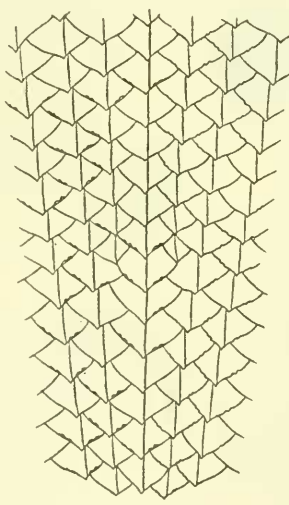
The colors of a freshly killed specimen at Santiago de Cuba (No. 26767 U.S.N.M., collector's No. 9077) are as follows: Above dark brownish gray with narrow irregular bands of isabella color; head uniform dark; tail cross-barred; underside whitish with oblique gray bands on throat and indistinct gray cross bands on belly to groin; a black blotch behind eye and two oblique blackish bands on side of neck.



FIGS. 58-59.—NOROPS OPHIOLEPIS. 2 X NAT. SIZE. NO. 27367, U.S.N.M. PINAR DEL RIO.—60 REPRESENTS SIDE OF TAIL, AT ABOUT THE FIFTH VERTICIL, OF SAME INDIVIDUAL. 4 X NAT. SIZE.



61



62

FIG. 61.—LEIOCEPHALUS CARINATUS. 2 X NAT. SIZE. NO. 26768, U.S.N.M. SANTIAGO DE CUBA.—62 REPRESENTS A HEAD LENGTH OF SCALES ON THE MIDDLE OF BACK OF THE SAME INDIVIDUAL. 4 X NAT. SIZE.

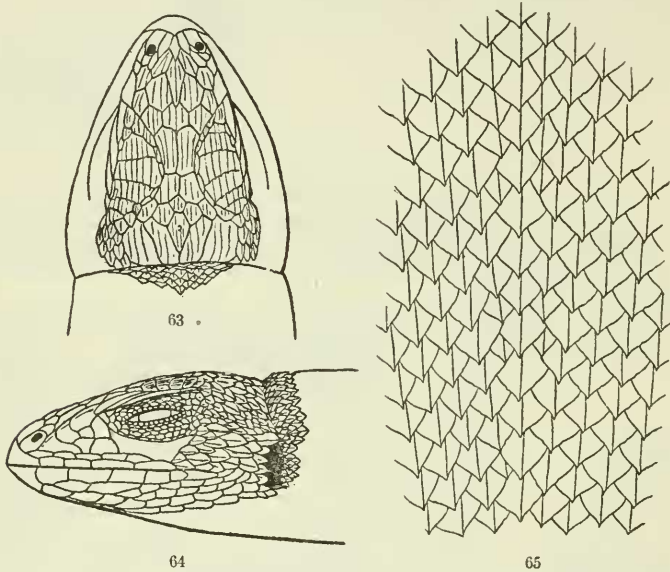
LEIOCEPHALUS CUBENSIS (Gray).

Figs. 63 to 65.

The name *L. vittatus* (Hallowell, 1856) by which this species is generally known is 16 years younger than *Tropidurus (Leiolaemus) cubensis* Gray,<sup>1</sup> given to a male specimen collected by W. S. MacLeay in Cuba.

<sup>1</sup> Ann. Nat. Hist., vol. 5, Apr. 1840, p. 110.

Boulenger<sup>1</sup> makes *Leiocephalus raviceps* Cope a synonym of this species. I have the types of Cope's species (No. 4162 U.S.N.M.) collected by Charles Wright in "Eastern Cuba" before me and can affirm that *L. raviceps* is a very distinct species and that the two have absolutely nothing to do with each other. In fact, they belong to different sections of the genus. Thus *L. cubensis* has three pairs of prefrontals (exclusive of internasals) while *L. raviceps* has only



FIGS. 63-64.—*LEIOCEPHALUS CUBENSIS*. 2 × NAT. SIZE. NO. 27375, U.S.N.M. PINAR DEL RIO.—65. REPRESENTS A HEAD LENGTH OF SCALES ON THE MIDDLE OF BACK OF THE SAME INDIVIDUAL. 4 × NAT. SIZE.

two, the posterior pair being exceedingly large. Moreover, *L. raviceps* is distinguished by much smaller scales, about 20 corresponding to a head length against about 12 in *L. cubensis*. It is related to *L. loxogrammus*, but not to *L. cubensis*.

The latter is widely distributed and was collected by Palmer and Riley at San Diego de los Baños, at Pinar del Rio, El Guamá, Caimito, Marianao, and on the Isle of Pines at Nueva Gerona. Also by Palmer in 1902 at Moro.

#### **LEIOCEPHALUS MACROPUS Cope.**

Figs. 66 to 67.

According to the old label in the bottle containing the types of this species in the United States National Museum, they came from Monte Verde in Eastern Cuba. The species seems to be confined to that portion of the island, as it was not collected by Palmer and

<sup>1</sup> Cat. Liz. Brit. Mus., vol. 2, 1885, p. 163.



Riley. It was found by Doctor\*Richmond and myself at Santiago de Cuba in 1900, and Palmer, in 1902, collected it at San Luis and Baracoa.

The colors of a specimen collected at Santiago de Cuba (No. 26769, U.S.N.M., collector's No. 9078) are as follows: Upper side vinaceous cinnamon with a coppery gloss; head more cinnamon; tail with blackish cross-bars narrowly edged with white posteriorly; from nostrils through eye along sides of neck and body to above and behind insertion of hind leg a broad blackish-brown band narrowly edged with pale above and below; upper labials, suboculars, and lower temporals to ear white; below whitish; throat and fore neck with numerous gray dots; lower labials dusky.

**CELESTUS DE LA SAGRA (Cocteau).**

Figs. 68 to 70.

The portion of de la Sagra's great work on Cuba, which treated of the lizards was published before the end of the year 1838. On the other hand, the

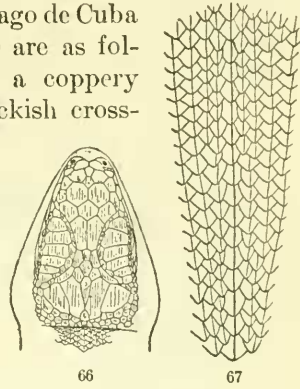
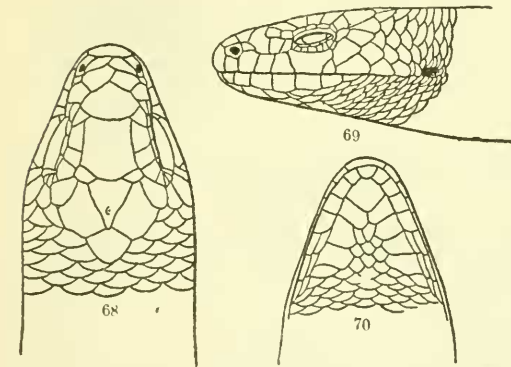


FIG. 66.—LEOIOCEPHALUS MACROPUS. 2 X NAT. SIZE. No. 26769, U.S.N.M. SANTIAGO DE CUBA.—67 REPRESENTS A HEAD LENGTH OF SCALES ON MIDDLE OF BACK OF SAME INDIVIDUAL, 4 X NAT. SIZE.

published before the end of the year 1838. On the other hand, the fifth volume of Duméril and Bibron's *Erpétologie Générale* did not appear until late in 1839 (the "Avertissement" is dated Oct. 1, 1839), and Cocteau's name for this species has a year's priority over their emendation of it.

Only one specimen of this slippery species was brought home by Palmer and Riley. It was taken at Cabañas, on May 15, 1900. The museum,



FIGS. 68-70.—CELESTUS DE LA SAGRA. 2 X NAT. SIZE. No. 27647, U.S.N.M. CABAÑAS.

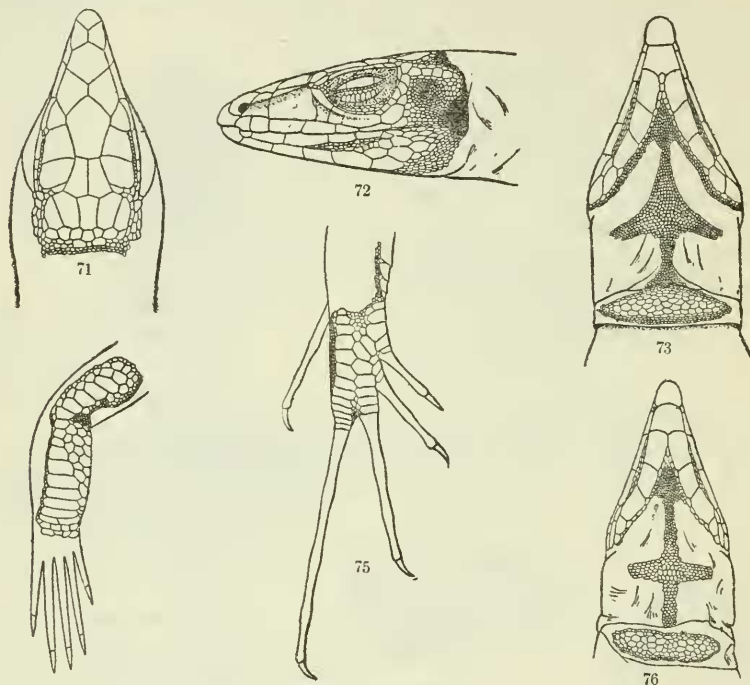
about the same time obtained a specimen from Mr. J. W. Daniel, jr., collected at Matanzas.

**AMEIVA AUBERI Cocteau.**

Figs. 71 to 76.

This species is usually described as having the gular scales uniform and minutely granular. This is also the condition in a large number

of specimens. However, in most of them there is a tendency to a slight enlargement of the median granules and in quite a few there is a well-pronounced median patch, as shown, for instance, in No. 27370 (fig. 76). This feature in several of our specimens, coupled with the difference in the relation of the first pair of chin-shields as shown in figures 73 and 76, and certain color differences which I



FIGS. 71-75.—*AMEIVA AUBERI*. 2 X NAT. SIZE. No. 26765, U.S.N.M. SANTIAGO DE CUBA.—76 THROAT OF ANOTHER SPECIMEN, 1½ X NAT. SIZE. No. 27370; EL GUAMÁ, PINAR DEL RIO.

noted, at one time induced me to believe that there might be two species of *Ameiva* in Cuba. Upon closer examination, however, it appears that no line can be drawn and that we have to do with a considerable degree of individual variation only.

Specimens collected by myself at Santiago de Cuba, April 23, 1900, were much more brilliantly colored than Cocteau's plate 6.<sup>1</sup> A male (No. 26765 U.S.N.M., collector's No. 9075) had top of head and a broad stripe on each side of the middle of the back tawny olive, the limbs above of the same color with blackish-brown marblings; from the interparietal to the base of the tail on the median line of the back a strongly defined whitish line which is slightly washed with greenish anteriorly and bluish on the sacrum, where it is gradually

<sup>1</sup> Hist. Fis. Pol. Nat. Cuba, vol. 4.

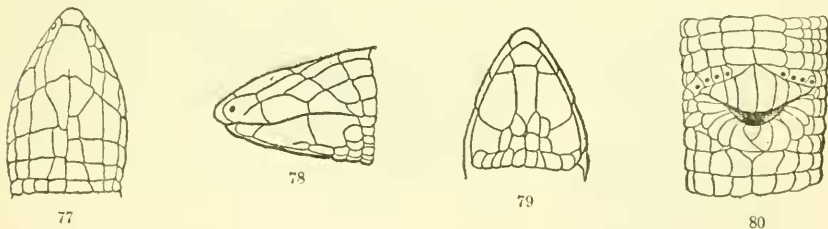
widening; on each side of the tawny olive dorsal band a narrow clay-colored line beginning at the posterior superciliaries and ending above insertion of hind legs; a similar line beginning at the posterior corner of eye over upper edge of ear to hind limb; between these lines a broad brownish-black band, which, however, is tawny olive like the dorsal band in front of the anterior legs; flanks above pale tawny olive dappled with pale dots, below colored like the underside and similarly dotted; tip of snout, chin and labials pale Indian red, underside whitish, belly strongly washed with turquoise blue becoming darker on tail toward the end; throat and foreneck inky black; tail clear turquoise blue in continuation of the median dorsal stripe; the dorsal tawny olive band and the lateral brownish-black band continue on each side of the tail as a dusky stripe tapering off and disappearing about the middle of the tail and bordered below by a similarly tapering and disappearing pure white stripe beginning at the posterior insertion of the femur and basally margined below by dusky; iris dark brown with an outer pale brown ring.

Another specimen (No. 26766, U.S.N.M., collector's No. 9076), same date and locality, was exactly like the above except that the underside of the body instead of being washed with bluish was suffused with flesh color, and the inky throat spot was absent.

CADEA BLANOIDES Stejneger.

Figs. 77 to 80.

This is the species usually known as *Amphisbaena punctata* Bell, 1828, a name preoccupied by Prince Max von Wied four years



FIGS. 77-80.—CADEA BLANOIDES. 2 X NAT. SIZE. NO. 27845, U.S.N.M. SAN DIEGO DE LOS BAÑOS.

earlier for a Brazilian species. Finding, moreover, that Gray was correct in considering the Cuban species as the type of a distinct genus, I changed the name to *Cadea blanoides*.<sup>1</sup>

Palmer and Riley secured specimens at San Diego de los Baños and at Guanajay.

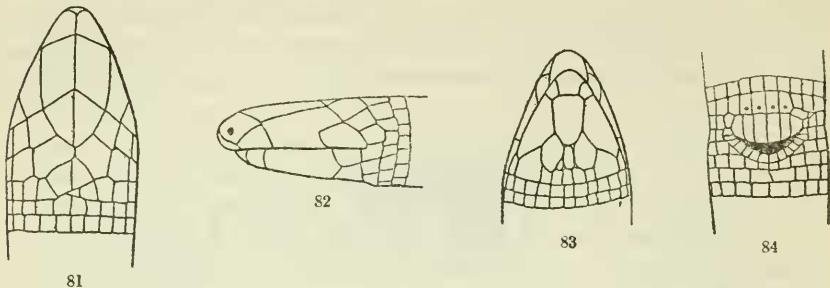
AMPHISBAENA CUBANA Peters.

Figs. 81 to 84.

Unlike the foregoing species, this one is closely allied to others inhabiting Haiti, Porto Rico, the Virgin Islands, and eastern South

<sup>1</sup> Proc. Biol. Soc. Washington, vol. 29, Apr. 4, 1916, p. 85.

America, and the chief difference from these is the unique and curious fusion of the ocular shield with the second supralabial, a character which not only holds good in the types and the two specimens here



FIGS. 81-84.—*AMPHISBAENA CUBANA*. 4 X NAT. SIZE. No. 26364, U.S.N.M. MATANZAS.

recorded, but also in 26 specimens from near Cienfuegos collected by and reported on by Doctor Barbour.<sup>1</sup>

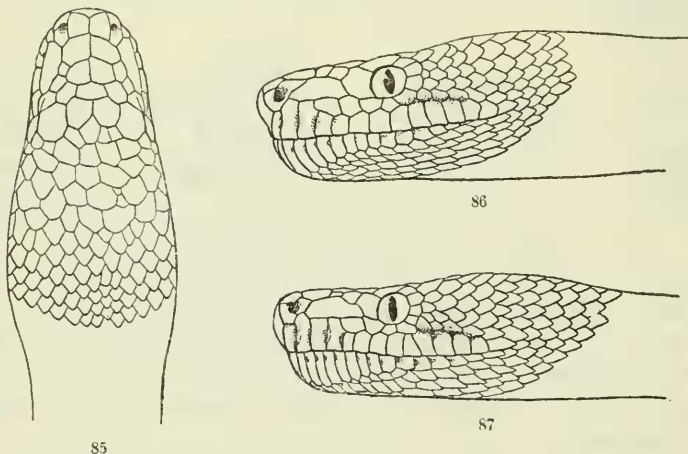
Two specimens were collected by Mr. J. W. Daniel, jr., at Matanzas on February 10, 1899, and presented to the United States National Museum.

## SERPENTES.

### *EPICRATES ANGULIFER* Bibron.

Figs. 85 to 87.

*Epicrates striatus*, of Haiti, differs from *E. angulifer*, of Cuba, normally and most conspicuously by the absence of a complete ring



FIGS. 85-86. *EPICRATES ANGULIFER*.  $\frac{3}{4}$  X NAT. SIZE. No. 27498, U.S.N.M. SAN DIEGO DE LOS BAÑOS.—87. SAME SPECIES,  $\frac{3}{4}$  X NAT. SIZE. No. 10416, U.S.N.M. CUBA.

of scales around the eye, two labials as a rule touching the eye. Usually it has only one scale intercalated between the supralabials

<sup>1</sup> Mem. Mus. Comp. Zool., vol. 44, No. 2, March, 1914, p. 317.

and the loreal while *E. angulifer*, as a rule, has two. Moreover, in the latter species three suboculars touch the eye.

None of these conditions, however, are without exceptions. Thus a true *E. striatus* figured by Jan <sup>1</sup> has two scales between loreal and labials, and one of our specimens of *E. angulifer*, the one here figured (fig. 87), has only one; but in the former the labials touch the eye, and in the latter they are excluded by three suboculars. On the strength of a young specimen in the Hamburg Museum, Doctor Zenneck <sup>2</sup> would unite the two species because it has two suboculars shutting out the labials from the eye. This specimen (Hamburg Mus., No. 1410a) I have been able to examine, thanks to Doctor Pfeffer's kindness. I can affirm that it is only a slightly abnormal *E. striatus*. The suboculars are very narrow and only two in number, and there is only one intercalated shield between loreal and labials. The characters distinguishing *E. striatus* and *E. angulifer* are not limited to the above, however, for *E. angulifer* has a marked depression on the upper portion of the supralabials behind the eyes; the occipital and temporal shields as well as those on the snout are larger; and there are also differences in the color pattern.

Palmer and Riley collected specimens at San Diego de los Baños and at Guanajay.

TROPIDOPHIS MELANURA (Schlegel).

One specimen was collected at El Guamá, Pinar del Rio, on March 26, 1900, by Palmer and Riley, and another by Bowdish on January 11, 1902, at Guamá.

I am inclined to regard *Tropidophis bucculenta* (Cope), from Navassa Island, as belonging near *T. melanura* rather than to *T. maculata*, though forming a distinct species. I have examined the type material (No. 12377, U.S.N.M.) and find the scale formulas of the three specimens to be as follows:

Scale rows.	Ventrals.	Caudals.	Supralabials.
27	186	27	10
25	180	30	10
25	183	29	10

I would call attention to the number of caudals, which is less than in any specimen of *T. melanura* or *maculata* which I have examined. The brownish stripes seen in *T. melanura* are plainly visible in all three specimens.

In this connection it may be well to call attention to the fact that in these snakes the characters supplied by the head-shields can not be expected to be without exceptions. A convincing demonstration

<sup>1</sup>Icon. Ophid., livr. 6, pl. 6.

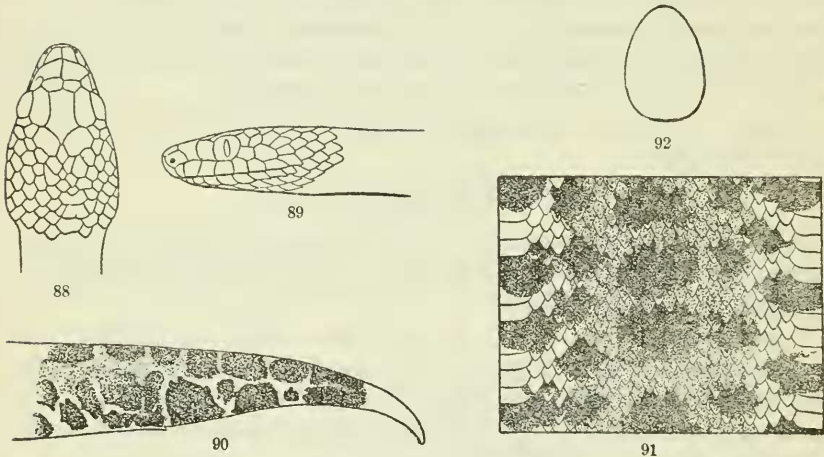
<sup>2</sup>Zeitschr. Wiss. Zool., vol. 64, 1898, p. 60.

of this truth has been made above in the case of the Cuban and Haitian species of *Epicrates*, and I believe that the same holds good to some extent in the case of the Cuban *Tropidophis maculatus* (Bibron) and the Haitian *T. haetianus* (Cope). The museum has recently received two specimens of the latter collected by Dr. A. Busck in San Francisco Mountain, Santo Domingo (Nos. 35979, 35980). They both have 27 scale rows and lack interparietals. They thus materially strengthen the position taken by me in my paper on the Bahama reptiles (in Shattuck, The Bahama Islands, 1905, p. 336).

**TROPIDOPHIS PARDALIS (Gundlach).**

Figs. 88 to 92.

This species is easily characterized by the low number of ventrals. In the Cuban specimens in the United States National Museum they



FIGS. 88-90.—*TROPIDOPHIS PARDALIS*.  $2\frac{3}{4} \times$  NAT. SIZE. No. 27392, U.S.N.M. EL GUAMÁ, PINAR DEL RIO.—91-92, SAME SPECIES.  $1\frac{1}{2} \times$  NAT. SIZE. No. 26360, U.S.N.M. MATANZAS.—90 REPRESENTS THE COLOR PATTERN AND SHAPE OF TAIL VIEWED FROM THE SIDE.—91 SHOWS THE COLOR PATTERN ACROSS THE MIDDLE OF THE BODY.—92 SHOWS THE CROSS SECTION OF THE BODY AT THE MIDDLE.

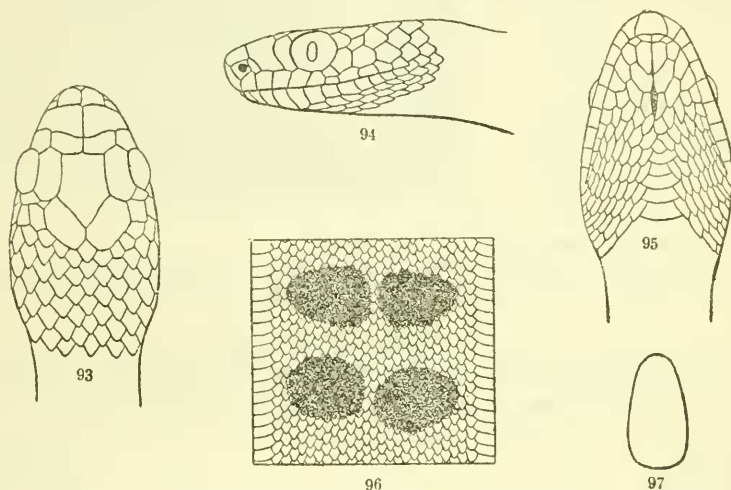
vary between 142 and 158, caudals between 24 and 30, scale rows between 21 and 25. The character of the vertebral row of scales is a very uncertain one in these snakes and apparently of no fundamental importance. In one of the specimens collected by Palmer and Riley at San Diego de los Baños (No. 27849, U.S.N.M.) it is distinctly enlarged. They also obtained a specimen at El Guamá (No. 27392) which has only 21 scale rows. Mr. J. W. Daniel, jr., presented the United States National Museum with a specimen taken at Matanzas, February 10, 1899.

## TROPIDOPHIS SEMICINCTUS (Gundlach and Peters).

Figs. 93 to 97.

A specimen of this very distinct species (No. 26361 U.S.N.M.) was collected by Mr. J. W. Daniel, jr., at Matanzas, in 1899. It has 25 scale rows, 209 ventrals, and 30 caudals.

This species is very closely allied to if not identical with Bocourt's *Tropidophis moreletii*.<sup>1</sup> The color pattern is very much alike and the scale formula nearly identical (type of *T. moreletii* has 25 scale rows, 208 ventrals, and 34 caudals) with that of the above specimen. The special characteristic of *T. moreletii* is said to be the "tectiform" shape of the scales, but even in this particular our Cuban specimen



FIGS. 93-95.—TROPIDOPHIS SEMICINCTUS.  $2\frac{1}{2} \times$  NAT. SIZE. No. 26361, U.S.N.M. MATANZAS.—96-97  $1\frac{1}{2} \times$  NAT. SIZE, REPRESENT COLOR PATTEEN AND SECTION THROUGH MIDDLE OF BODY OF SAME SPECIMEN.

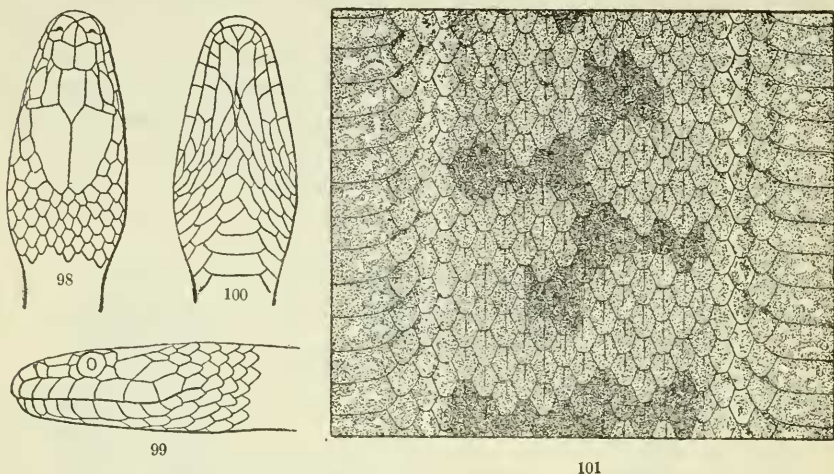
matches it, for the scales of the latter show a decided ridge sometimes approaching a faint keel. The type of *T. moreletii* is said to have been collected by A. Morelet at Vera Paz, Guatemala, but there is no other record from the mainland that I am aware of. However, some mistake may have crept in, for Morelet, as we know, collected also in Cuba. In part confirmation of my doubt as to the correctness of the locality, I may mention that in A. Duméril's Catalogue Méthodique de la Collection des Reptiles du Muséum d'Historie Naturelle de Paris (1851, p. 216), there is listed a *Tropidophis maculatus* collected by Morelet in Cuba, and I suspect that this may be the same specimen which afterwards served as the type of *T. moreletii*.

<sup>1</sup> Bull. Soc. Philom. Paris (7), vol. 9, 1885, p. 113; Miss. Sci. Mexique, Zool., Rept., livr. 11, 1888, pl. 42, figs. 5-5f.

**TRETANORHINUS VARIABILIS** Duméril and Bibron.

Figs. 98 to 101.

Palmer and Riley got this species at Guanajay, San Diego de los Baños, and El Guamá in 1900, and in 1902 Mr. Palmer collected it at El Cobre.

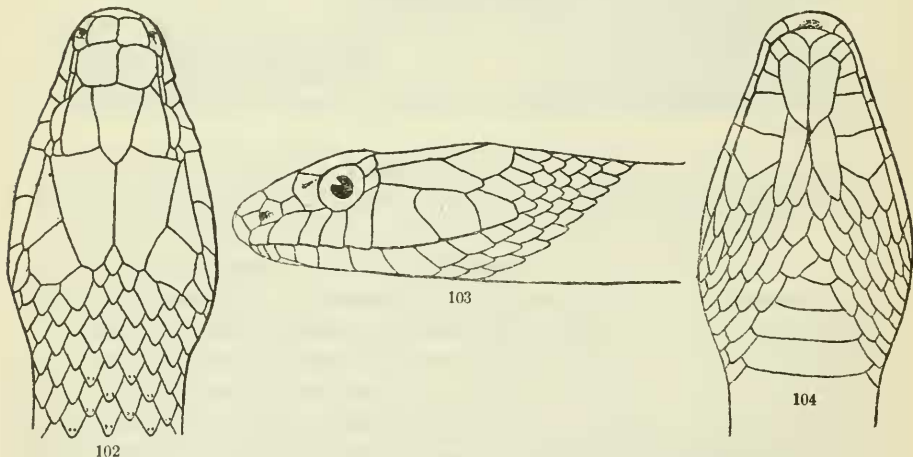


FIGS. 98-101.—*TRETANORHINUS VARIABILIS*.  $1\frac{1}{2} \times$  NAT. SIZE. NO. 27393 U.S.N.M. EL GUAM PINAR DEL RIO.—101 SHOWS THE COLOR PATTERN AT ABOUT THE MIDDLE OF THE BODY.

**ALSOPHIS ANGULIFER** (Bibron).

Figs. 102 to 104.

Of this common species nearly all the parties obtained specimens. The various localities are as follows: Matanzas, El Guamá, Guanajay,



FIGS. 102-104.—*ALSOPHIS ANGULIFER*. NAT. SIZE. NO. 27501, U.S.N.M. SAN DIEGO DE LOS BAÑOS San Diego de los Baños, Cabañas, and Isle of Pines. One of the Isle of Pines specimens (No. 28071) shows traces of light spots on the scales on the anterior part of the body, thus tending toward the form *adspersus*.



*Measurements of Alsophis angulifer.*

Museum and No.	Age.	Locality.	When collected.	By whom collected.	Scale rows.		Ventrals.	Anal.	Subcaudals.	Labials.	Temporals.	Oculars.
U. S. Nat. 10410	Adult	Cuba	Mar. —, 1880	Prof. E. Poey.	17	172	2	117		81+2	1+2	
U. S. Nat. 12387	Adult	do	do	Gundlach	17	170	2	123		81+1	1+2	
U. S. Nat. 12387A	Adult	do	do	do	17	175	2	117		81+2	1+2	
U. S. Nat. 26359	Adult	Matanzas, Cuba	Feb. 10, 1899	J. W. Daniel, jr.	17	170	2	115		81+2	1+2	
U. S. Nat. 26362	Adult	do	do	do	17	176	2	109		81+2	1+2	
U. S. Nat. 27397	Adult	El Guamá, Cuba	Mar. 22, 1900	Palmer and Riley	17	163	2	117		81+2	1+2	
U. S. Nat. 27398	Adult	do	Mar. 6, 1900	do	17	170	2	113		81+2	1+2	
U. S. Nat. 27399	Adult	do	do	do	17	171	2	117		81+2	1+2	
U. S. Nat. 27500	Adult	Guamá, Cuba	June 1, 1900	do	17	176	2	117		81+2	1+2	
U. S. Nat. 27501	Adult	S. Diego de los Baños, Cuba	Apr. 24, 1900	do	17	173	2	117		81+2	1+2	
U. S. Nat. 27646 <sup>1</sup>	Adult	Cabañas, Cuba	May 15, 1900	do	17	170	2	117		81+2	1+2	
U. S. Nat. 27984	Adult	Isle of Pines	July 8, 1900	do	17	168	2	114		81+2	1+2	
U. S. Nat. 28071	Adult	do	July 3, 1900	do	17	170	2	117		81+2	1+2	
U. S. Nat. 28072	Adult	do	do	do	17	166	2	117		81+2	1+2	

<sup>1</sup> Head and neck only.

ALSOPHIS ANGULIFER ADSPERSUS (Gundlach and Peters).

Doctor Barbour informs me that the specimens from eastern Cuba which he has examined agree in having light centers to the scales, and expresses the opinion that they represent a fairly well characterized form. Our specimens corroborate this conclusion. The ones from Guamá, collected by Bowdish, are dark with light centers. A specimen (No. 29790) taken by Palmer at El Cobre on February 22, 1902, is quite light, because the light central spots occupy nearly the whole scale, leaving only the margins dark, nearly blackish, on the anterior portion of the body.

*Measurements of Alsophis angulifer adspersus.*

Museum and No.	Age.	Locality.	When collected.	By whom collected.	Scale rows.		Ventrals.	Anal.	Labials.	Temporals.	Oculars.
U. S. Nat. 29781 <sup>1</sup>	Adult	Guamá, Cuba	Jan. 1, 1902	B. S. Bowdish						81+2	1+2
U. S. Nat. 29782 <sup>1</sup>	Adult	do	do	do						81+2	1+2
U. S. Nat. 29783	Adult	do	Jan. 2, 1902	do	17	177	2	117	8	91+2	1+2
U. S. Nat. 29790	Adult	El Cobre, Cuba	Feb. 22, 1902	Wm. Palmer	17	175	2	117	2	81+1	1+2

<sup>1</sup> Head only.

LEIMADOPHIS ANDREAE (Reinhardt and Lütken).

Figs. 105-107.

When Barbour described his *Leimadophis nebulatus*<sup>1</sup> he had apparently only seen specimens from the Isle of Pines, the type-locality, and from the western part of the Cuban main island typical of *L.*

<sup>1</sup> Ann. Carnegie Mus., vol. 10, Jan. 31, 1916, p. 305, pl. 28, figs. 1-2.

*andreae* (type-locality, Habana). Having at least 20 specimens of the latter and seven of the former and finding the variation of the color pattern in the two forms very slight throughout this large series, he was quite justified in diagnosing them under different names.

In a series of 20 specimens in the United States National Museum from the two extreme ends of Cuba proper and also from the Isle of Pines, a different state of affairs is revealed.

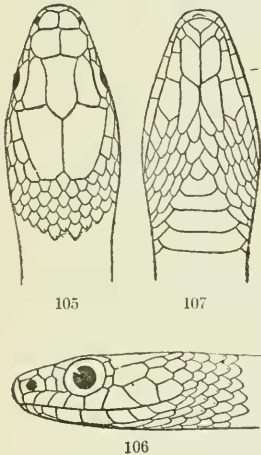
A topotype of *T. nebulatus* (No. 28036) collected by Palmer and Riley at Nueva Gerona, Isle of Pines, July 5, 1900, agrees very well with Barbour's description and figure of this form. The white lateral spots on the anterior part of the body have a tendency to become elongate on the fourth and fifth scale rows on each side, and on the posterior part they actually fuse with a distinct white dorso-lateral stripe.

Palmer and Riley's specimens from El Guamá, Pinar del Rio (Nos. 27394-5), San Diego de los Baños (Nos. 27853-6), and Cañañas (Nos. 27640-1), as well as one recently collected by Mr. J. B. Henderson and Dr. Paul Bartsch, at La Mulata (No. 51845), all in western Cuba, agree with Barbour's description and figure of *L. andreae* and with Reinhardt and Lütken's original description of this species, and show at most some scattered hair-fine white margins to some of the dorsal scales.

I turn now to the specimens from eastern Cuba.

A male from Santiago de Cuba (No. 26764, U.S.N.M.) is unique in having the back crossed from ventrals to ventrals by numerous (more than 80) light cross bars formed by the narrow white margins to the scales. The black intervals are slightly wider than the light cross bars. The white margin is possibly slightly emphasized on the fifth scale row on each side, but there is no noticeable light line except on each side of the tail.

Bowdish, in the winter of 1901-2, collected four specimens at Guamá. Of these No. 29756 is very much like our topotype of *L. nebulatus* mentioned above and nobody would for an instant regard them as belonging to different species. Moreover, they both resemble greatly Bibron's figure<sup>1</sup> of what he called *Coluber cursor*, or *Dromicus cursor*, from Cuba (but without definite locality). The other three specimens are an elaboration and exaggeration of this type and that of the Santiago specimen culminating in No. 29780 which has about 50 distinct white cross bands on the body, with



FIGS. 105-107.—LEIMADOPHIS ANDREAЕ. 2X NAT. SIZE. NO. 26764  
U.S.N.M. SANTIAGO DE CUBA.

<sup>1</sup>Hist. Fis. Pol. Hist. Nat. Cuba, Atlas, 1842, pl. 28.

broader, more rhomboidal black interspaces caused by the widening of the white band on the fifth scale row, thus recalling the lateral stripe of the other specimens and actually continuing as such on the second scale row of the tail.

From the above material one might be tempted to establish three somewhat ill-defined subspecies—namely, the melanistic *Leimadophis andreae andreae* from western Cuba, *L. andreae nebulatus* from the Isle of Pines, and a third, characterized by numerous definite whitish crossbars, from eastern Cuba, were it not for a specimen (No. 29850) collected by Palmer on January 30, 1902, at Baracoa, near the extreme eastern end of the island. This specimen is a typical *L. andreae* with no indication of white blotches or cross bands. The only difference is that it has a narrow pale line on the fifth scale row and that the whitish head pattern is almost obliterated.

Nothing need to be said about the specimens with the general locality "Cuba" except that the specimen (No. 6183) which the museum received in 1863 from the Paris museum under the name of *Dromicus fugitivus* is much more typical than Cocteau's figure, and exactly like the specimen figured by Jan.<sup>1</sup>

A young specimen (No. 27398) collected by Palmer and Riley at El Guamá, March 26, 1900, is worthy of mention as being a partial albino of the typical form, in which the black is absent, the back being a medium tawny gray.

While I do not attach much importance to the discrepancy in the number of ventrals and subcaudals shown in the table below because of the small number of specimens from eastern Cuba, it may be well to call attention to the fact that both the ventrals and subcaudals are more numerous, on the average, in the six specimens from the eastern part of the island. The average number of ventrals in our 10 western specimens is 145. Barbour states that in 7 specimens from the Isle of Pines, the average is 143 and in an equal number of Cuban examples in the Museum of Comparative Zoology it is 144.<sup>2</sup> As he apparently had no specimens from eastern Cuba, his figures strongly corroborate those from the United States National Museum specimens.

<sup>1</sup> Icon. Ophid., livr. 23, pl. 5, fig. 2.

<sup>2</sup> Ann. Carnegie Mus., vol. 10, 1916, 306.

Measurements of *Leimadophis andreae*.

Museum and No.	Age.	Locality.	When collected.	By whom collected.	Scale rows.	Ventrals.	Anal.	Subcaudals.	Labials.	Temporals.	Oculars.
U. S. Nat. 29584..	Adult...	Guamá, Cuba..	Nov. 19, 1901	B. S. Bowdish.	17	153	2	110	8	1+2	1+2
U. S. Nat. 29754..	Adult...	.....do.....	Nov. 30, 1901	.....do.....	17	154	2	.....	8	1+2	1+2
U. S. Nat. 29756..	Adult...	.....do.....	Dec. 25, 1901	.....do.....	17	158	2	121	8	1+2	1+2
U. S. Nat. 29780..	Adult...	.....do.....	Jan. 6, 1902	.....do.....	17	153	2	105	8	1+2	1+2
U. S. Nat. 29850..	Adult...	Baracoa, Cuba	Jan. 30, 1902	Wm. Palmer.	17	153	2	106	.....	.....	.....
U. S. Nat. 26764..	Young..	Santiago, Cuba.	.....	H. B. Parker.	17	150	2	108	8	1+2	1+2
U. S. Nat. 27394..	Adult...	El Guamá, Cuba	Mar. 6, 1900	Palmer and Riley.	17	145	2	111	8	1+2	1+2
U. S. Nat. 27395..	Adult...	.....do.....	.....do.....	.....do.....	17	142	2	.....	8	1+2	1+2
U. S. Nat. 27396..	H a l f grown.	.....do.....	Mar. 26, 1900	.....do.....	17	138	2	106	8	1+2	1+2
U. S. Nat. 27640..	Adult...	Cabañas, Cuba.	May 15, 1900	.....do.....	17	144	2	91	8-9	1+2	1+2
U. S. Nat. 27641..	Adult...	.....do.....	.....do.....	.....do.....	17	153	2	106	8	1+2	1+2
U. S. Nat. 27853..	H a l f grown.	San Diego de los Baños, Cuba.	Apr. 14, 1900	.....do.....	17	146	2	.....	8	1+2	1+2
U. S. Nat. 27854..	H a l f grown.	.....do.....	.....do.....	.....do.....	17	147	2	109	8	1+2	1+2
U. S. Nat. 27855..	H a l f grown.	.....do.....	.....do.....	.....do.....	17	143	2	.....	8	1+2	2+2
U. S. Nat. 27856..	H a l f grown.	.....do.....	.....do.....	.....do.....	17	143	2	103	8	1+2	1+2
U. S. Nat. 28036..	H a l f grown.	Nueva Gerona, Isle of Pines.	July 5, 1900	.....do.....	17	139	2	.....	8	1+2	1+2

## ARRHYTON TAENIATUM Günther.

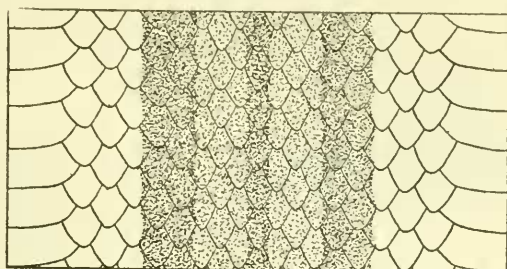
Figs. 108 to 115.

A specimen (No. 29768 U.S.N.M.) was collected by Bowdish at Guamá, on January 7, 1902, "in top soil near hospital," which I refer to this species for the present, at least. It agrees in every respect with No. 29769 which was collected by Doctor Wright, and therefore probably in eastern Cuba. Both differ from the types of *A. taeniatum* and *A. fulvum* in having the preocular so reduced in size as to allow the prefrontals to enter the orbit in the interval between supraocular and preocular, as shown in figure 114, while in the types mentioned the supraocular is broadly in contact with the preocular.<sup>1</sup> There are also some other slight differences in the shape of the snout and the stripes on the body, but in most other respects they are so alike that a specific separation does not seem warranted.

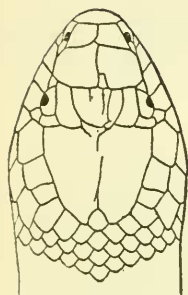
The material available in museums is too limited to allow of any but tentative conclusions as to the status of the species described in this genus, yet thus far the specimens recorded since Boulenger's treatment of it in the second volume of the Catalogue of Snakes in British Museum (1894) bear out the conclusions there set forth. An analysis of the scale formulas of six specimens of *A. taeniatum* and seven of *A. vittatum* (figs. 116 to 119) seems to indicate that the species are not unusually variable. We have here clearly two species—*A. taeniatum* characterized by the absence of a loreal (loreal

<sup>1</sup> See fig. 110 and Boulenger, Cat. Snakes Brit. Mus., vol. 2, pl. 12, fig. 2.

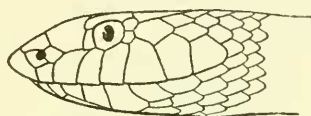
fused with prefrontal) combined with a high number of ventrals (171 to 186, average 177) and subcaudals (69 to 100, average 84.5), while *A. vittatum* has a well-separated loreal combined with few ventrals (112 to 124, average 117.5) and subcaudals (54 to 73, average 64.5).



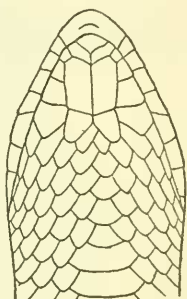
108



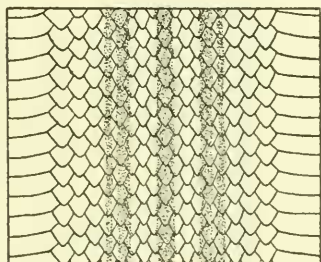
109



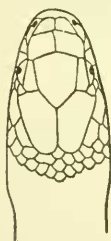
110



111



112



113



114



115

FIGS. 108-111.—*ARRHYTON TAENIATUM*.  $2\frac{3}{4} \times$  NAT. SIZE. No. 12421, U.S.N.M. TYPE OF (*A. FULVUM* COPE). CUBA.—108 REPRESENTS COLOR PATTERN AT ABOUT THE MIDDLE OF THE BODY.—112-115, SAME SPECIES.  $2\frac{3}{4} \times$  NAT. SIZE. No. 29769 U.S.N.M. CUBA.—112 REPRESENTS COLOR PATTERN AT ABOUT MIDDLE OF BODY.

The third species (*A. redimitum*) is known only from Cope's original description<sup>1</sup> and Bocourt's description and figure of a second specimen.<sup>2</sup> No specimen seems to have been found by recent collectors, but in view of the apparent rarity of all these snakes, this does not necessarily mean that the only two specimens known are freaks or extremes of individual variation of one of the other species. The

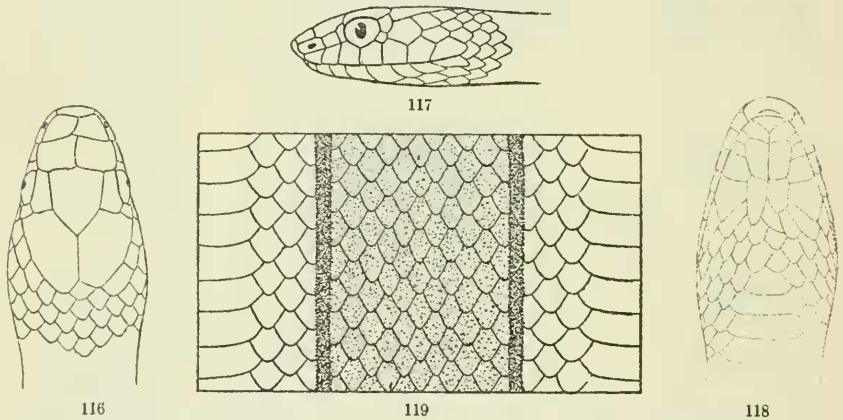
<sup>1</sup> Proc. Acad. Nat. Sci., Philadelphia, 1862, p. 81.

<sup>2</sup> Miss. Sci. Mexique, Zool., Rept., p. 561, pl. 35, fig. 8.

type is apparently lost and Cope did not give the scale formula of the species. There can be but little doubt that Bocourt described and figured the same form as Cope, and the number of ventrals and subcaudals of this specimen (ventrals 141, subcaudals 120) coupled with the peculiarity of the single prefrontal indicates such a radical difference from either of the other two species as to justify us in retaining *A. redimitum* as a good species. The diagnostic characters of the three species may be briefly tabulated as follows:

Species.	Ventrals.	Caudals.	Loreal.	Prefrontal.
<i>A. redimitum</i> .....	141	120	1	1
<i>A. vittatum</i> .....	112-124	54-73	1	2
<i>A. taeniatum</i> .....	171-186	69-100	0	2

Doctor Barbour has kindly furnished me with the scale formulas of the three specimens of *A. vittatum* and two of *A. taeniatum* collected



FIGS. 116-119.—ARRHYTON VITTATUM.  $2\frac{3}{4}$  X NAT. SIZE. No. 5784, U.S.N.M. TYPE OF (*A. BIVITTATUM*, COPE). CUBA.—119 REPRESENTS COLOR PATTERN AT ABOUT MIDDLE OF BODY.

recently by himself or his collectors in Cuba. They are incorporated in the above table and have materially assisted in clearing up the doubts surrounding these rare snakes.

I have made no special reference to Andersson's *Arrhyton quenselii*,<sup>1</sup> partly because the reference of this snake to *Arrhyton* seems highly problematical, and partly because its habitat is unknown. It is even probable that the specimens upon which it is founded did not come from the West Indies. *A. quenselii* has two nasals, no loreal, two prefrontals, two temporals, 153 to 157 ventrals, and 63 to 67 subcaudals.

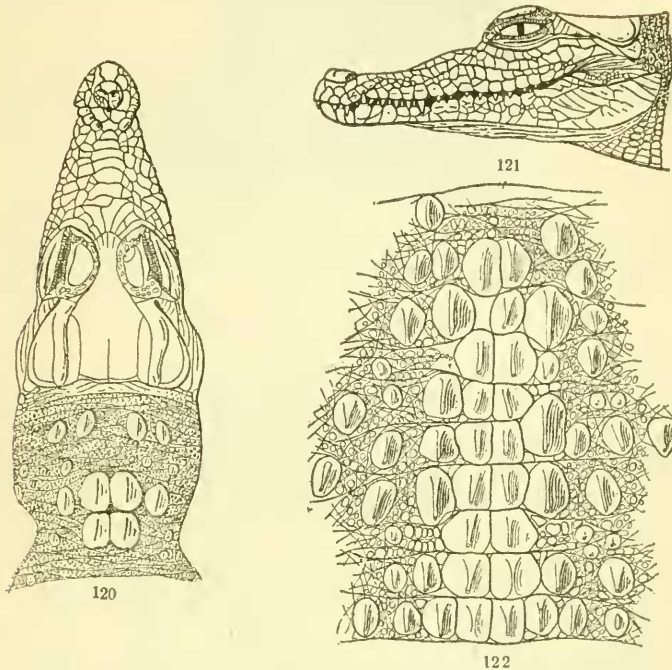
<sup>1</sup> Bih. Svenska Vet. Akad. Handl., vol. 27, sec. 4, No. 5, 1901, p. 15, pl. 1, figs. 5-7.

## LORICATA.

## CROCODYLUS ACUTUS Cuvier.

Figs. 120 to 122.

To anybody who has examined Seba's plate,<sup>1</sup> which is the sole basis of Laurenti's *Crocodylus americanus*, the application of the



FIGS. 120-121.—CROCODYLUS ACUTUS, YOUNG.  $\frac{3}{4}$  X NAT. SIZE. No. 28760, U.S.N.M. ISLE OF PINES.  
122.—NAT. SIZE. REPRESENTS THE ANTERIOR DORSAL SCUTELLATION OF THE SAME INDIVIDUAL.

latter name to the present species seems absurd. That picture is absolutely unidentifiable.

This species was obtained by Palmer and Riley on the Isle of Pines.

It may be interesting in this connection to point out that neither Hornaday nor Jeffries Wyman was the first to record the occurrence of the crocodile in Florida. That was done as early as 1822 by Rafinesque who published the fact in the *Kentucky Gazette*.<sup>2</sup>

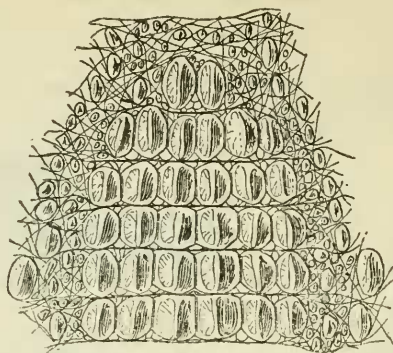
The opinion has recently been expressed that *Crocodylus rhombifer* Cuvier is not a good species, but only young specimens of *C. acutus*.<sup>3</sup> Nothing could be further from the truth. *C. rhombifer* is a very distinct species easily characterized by the different dorsal scutella-

<sup>1</sup> *Thesaurus*, vol. 1, pl. 106.

<sup>2</sup> *New series*, vol. 1, No. 29, July 18, 1822, p. 3, col. 2.

<sup>3</sup> Werner, *Zool. Jahrb. Syst.*, vol. 28, p. 265.

tion as may be seen from the figure here presented (fig. 123), which is taken from a much older specimen than the one given of *C. acutus*

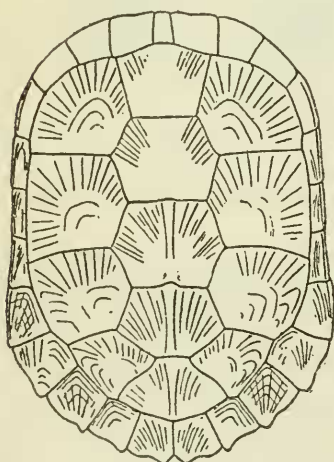


123

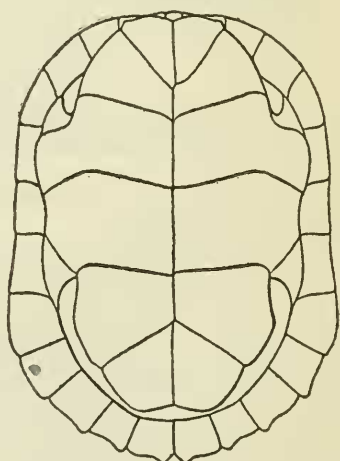
FIG. 123.—*CROCODYLUS RHOMBIFER*.  $\frac{1}{2}$   $\times$  NAT. SIZE. No. 13578. CUBA. REPRESENTS ANTERIOR PORTION OF DORSAL SCUTA.

(fig. 122). The two species may be distinguished by this character alone as follows:

- a*<sup>1</sup>. Dorsal scutes in two median longitudinal regular rows with an interrupted and irregular row of contiguous scutes on each side of the median rows, the keels of the latter being lower than the adjacent ones. . . . . *C. acutus*.  
*a*<sup>2</sup>. Dorsal scutes (except anterior and posterior transverse rows) in six longitudinal regular and adjacent rows, the keels of which are of the same height . . . . . *C. rhombifer*.



124



125

FIGS. 124-125.—*PSEUDEMYDYS PALUSTRIS*.— $\frac{1}{2}$   $\times$  NAT. SIZE. No. 27639, U.S.N.M. CABAÑAS.

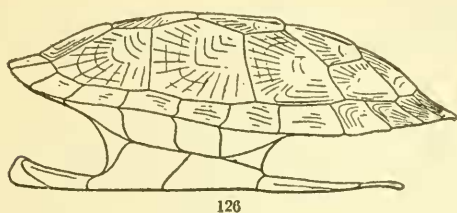


TESTUDINATA.

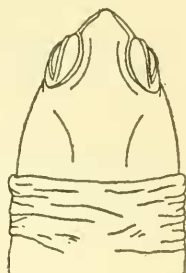
PSEUDEMYS PALUSTRIS (Gmelin).

Figs. 124 to 128.

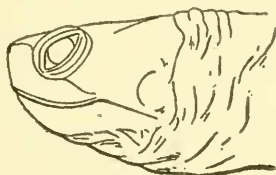
Two specimens of this, the only fresh-water turtle found in Cuba, were collected at Cabañas on May 17, 1900, by Palmer and Riley.



126



127



128

FIGS. 126-128.—PSEUDEMYS PALUSTRIS. 126.— $\frac{1}{2}$  X NAT. SIZE. 127-128.—NAT. SIZE. No. 27639, U.S.N.M. CABAÑAS.